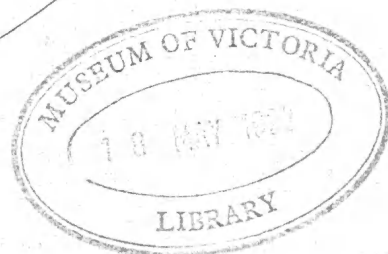




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MEETINGS: Second Tuesday of each month at 8pm at the Cairns Education Centre, Greenslopes Street, Edgehill, Cairns.

FIELD DAYS: Sunday before meeting.



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SUBSCRIPTIONS: (Due September 30th)

CITY AND SUBURBAN MEMBERS.....\$15.00
COUNTRY MEMBERS & PENSIONERS...\$10.00
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NOTES FROM THE EDITOR.

One of the most Endangered birds in North Queensland is the Golden-Shouldered parrot. Fewer than 1000 are thought to survive at scattered localities on Cape York Peninsula and the Queensland National Parks and Wildlife Service and the World Wide Fund for Nature (Australia) are funding research on the species. As part of that research, we are seeking the assistance from members of the club intending to go birdwatching anywhere between Normanton and Cape York. In particular, we would like to hear from people who are prepared to sit at selected waterholes during the 'dry' season and count the parrots and other seed-eaters that come to drink. We would suggest places to visit and techniques for counting and, though we cannot provide material support, we would try to ensure counters did actually see at least one Golden-shouldered Parrot at our study site at Musgrave. We would also try to direct birdwatchers to other birds they might like to see on the Cape. Anyone who would like to help should contact Stephen Garnett, P.O. Box 2066, Cairns. Q. 4870

Following discussions at the committee meeting held on 3rd March, 1993 and the following week's Members Meeting of 9th March, Annual Membership Subscriptions shall rise from the due date of 30th September, 1993. City and suburban memberships shall be \$15.00, pensioners, students and country members \$10.00, with family memberships rising to \$20.00 per year. It was decided that subscriptions shall be reviewed every 2 years.

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NOTES ON THE VEGETATION OF SECTION 'B' CAIRNS CENTRAL SWAMP.

By: R. JAGO.

This section is bounded by Severin, Grove, Gatton and the Fearnley Street drain. Some 129 species of vascular plants occur in this section, of which 101 species could be said to be native to this area. *Calophyllum inophyllum* occurs only as small seedlings and although native to these parts of North Qld. they probably owe their existence to seeds from nearby cultivated specimens having been dumped here.

Some 28 species of exotic plants occur in this section, some of which could still be considered as garden escapees. The variability within the native vegetation of these remnant isolates is demonstrated by the occurrence of some 26 native species in section 'B' that are unrecorded for section 'A'.

ADDITIONAL NOTES SECTION 'A'.

The following species have come to light since the Preliminary Check List was published in the previous issue of the Journal. (Refer Journal No. 194).

Cyperaceae sp.	An additional yet unidentified species.
Cyperus sp. No. 822	Has identified as <i>Cyperus aromaticus</i> . An introduced exotic species that has become naturalized in the Cairns region
<i>Crotalaria pallida</i> *	Streaked rattlepod. A common and wide spread weed native to Tropical Africa.
<i>Drynaria rigidula</i>	Basket fern
<i>Endiandra vulgaris</i>	Northern Laurel. Several small trees of this species occur.
<i>Gmelina dalrympleana</i>	Grey teak
<i>Platycerium hillii</i>	Northern elkhorn
<i>Scleria terrestris</i>	
<i>Syngonium podophyllum</i> *	Arrowhead plant. A naturalized weed species commonly cultivated in gardens.

Utricularia australis Bladder wort. Common in the drains along the boundary of this section.

*Zebrina pedula** Wandering jew
(* Naturalized - not native)

PRELIMINARY CHECK LIST OF VASCULAR PLANT SPECIES NATIVE TO SECTION 'B' CAIRNS CENTRAL SWAMP AND ASSOCIATED WETLANDS

PTERIDOPHYTES (Ferns)

<i>Acrostichum speciosum</i>	Mangrove fern	C
<i>Blechnum idicum</i>	Swamp water fern	C
<i>Drynaria rigidula</i>	Basket fern	U
<i>Pyrrhosia longifolia</i>		C
<i>Stenochlaena palustris</i>	Climbing swamp fern	C

ANGIOSPERMS DICOTYLEDONS

<i>Acmena hemilampra</i>		
s.sp. <i>hemilampra</i>	Cassowary gum	U
<i>Adenanthera pavonia</i>	False red sandlewood	C
<i>Aegiceras corniculatum</i>	River mangrove	C
<i>Archidendron grandiflorum</i>	Laceflower tree	C
<i>Avicennia eucalyptifolia</i>	Grey mangrove	C
<i>Beilschmiedia obtusifolia</i>	Blush walnut	C
<i>Brachychiton acerifolius</i>	Flame tree	U
<i>Breynia cernua</i>	Stinking leaf tree	C
<i>Brugiera gymnorhiza</i>	Mangrove	C
<i>Calophyllum inophyllum</i>	Alexandrian laurel	U
<i>Calophyllum sil</i>	Blush touriga	C
<i>Carallia brachiata</i>	Corky bark	C
<i>Cayratia maritima</i>	Native grape	U
<i>Chionanthus ramiflorus</i>	Native olive	C
<i>Claoxylon tenerifolium</i>		C
<i>Cleistanthus apodus</i>		C
<i>Cryptocarya hypospodia</i>	Northern laurel	C
<i>Cryptocarya murrayii</i>	Murray's laurel	C
<i>Cupaniopsis anacardioides</i>	Tuckaroo	C
<i>Derris trifoliata</i>	Derris	C
<i>Dillenia alata</i>	Red beech	C
<i>Diospyros compacta</i> ?		U
<i>Dischidia nummularia</i>	Button orchid	U
<i>Dysoxylum gaudichaudianum</i>	Ivory mahogany	U
<i>Endiandra hypotephra</i>	Blue walnut	C
<i>Eudcalyptus intermedia</i>	Bloodwood	U
<i>Euodia elleryana</i>	Evodia	C
<i>Euroschinus falcata</i>	Ribbonwood	C

Excoecaria agallocha	Milky mangrove	U
Ficus benjamina	Weeping fig	C
Ficus congesta	Red leaf fig	C
Ficus virens	Fig	C
Ganophyllum falcatum	Scaly ash	U
Glochidion perakenses		
var. supra - axillare	Buttonwood	C
Glochidion philippicum	Buttonwood	C
Gomphandra australiana		U
Guioa acutifolia		C
Gymnanthera nitida		C
Hibiscus tiliaceus	Cottonwood	C
Jasminum aemulum		C
Jasminum didymum		C
Litsea fawcettiana		C
Ludwigia octovalvis	Willow primrose	U
Limnitzera racemosa	Black mangrove	C
Macaranga involuocrata		
var. mallotoides	Buff macaranga	C
Macaranga polyadenia	Swamp macaranga	C
Macaranga tanarius	Blush macaranga	C
Malaisia scandens	Crow ash vine	C
Mallotus philippensis	Kamala	C
Melaleuca dealbata	Tea tree	U
Melaleuca leucandendra	Tea tree	C
Melaleuca quinquenervia	Tea tree	C
Melia azedarch		
var. australasica	White cedar	U
Memecylon mylandii		U
Mimusops elengi	Red coondoo	U
Mischocarpus lanchnocarpus		C
Myristica inspida	Nutmeg	U
Nauclea orientalis	Leichhardt tree	C
Parsonia velutina		U
Piper caninum	Native pepper	C
Pittosporum ferrugineum		C
Planchonella chartaceae	Dugulla	U
Planchonia careya	Cocky apple	U
Polyalthia nitidissima	Canary beech	C
Polyscias australiana	Ivory basswood	C
Pongamia pinnata		C
Prema corymbosa		C
Randia fitzalanii		C
Schefflera actinophylla	Umbrella tree	C
Sesuvium portulacastrum	Sea purslane	C
Syzyguim angophorides	Swamp satinash	C
Syzyguim tierneyana	Creek satinash	C

Terminalia catappa	Sea almond	U
Terminalia sericocarpa	Damson	C
Timonius timon		C
Tylophora sp.		R
Vandansia retusa	Native wistaria	C

MONOCOTYLEDONS

Archontophoenix alexandrae	Alexandra palm	C
Calamus radicalis	Vicious hairy mary	U
Commelina sp. ?		C
Cordyline manners-suttoniae		C
Cyperus sp. No. 821		C
Dianella bambusifolia	Flax lilly	U
Dioscorea bulbifera	Cheeky yam	C
Fimbristylis ferruginea		C
Flagellaria indica	Supplejack	C
Hydriastele wedlandiana	Water palm	U
Hypolytrum nemorum		C
Oplismenus compositus	Creeping beard grass	C
Pandanus solms - laubachii	Pandanus palm	C
Phragmites karka	Reed grass	C
Ptychosperma elegans	Solitaire palm	C
Scleria sp.		C
Sporobolus virginicus	Saltwater couch	C
Smilax australis	Sarsaparilla vine	C
Typha orientalis	Broad leaf cumbungii	C

NATURALIZED & INTRODUCED SPECIES

PTERIDOPHYTES

Nephrolepis exalta	Boston fern	C
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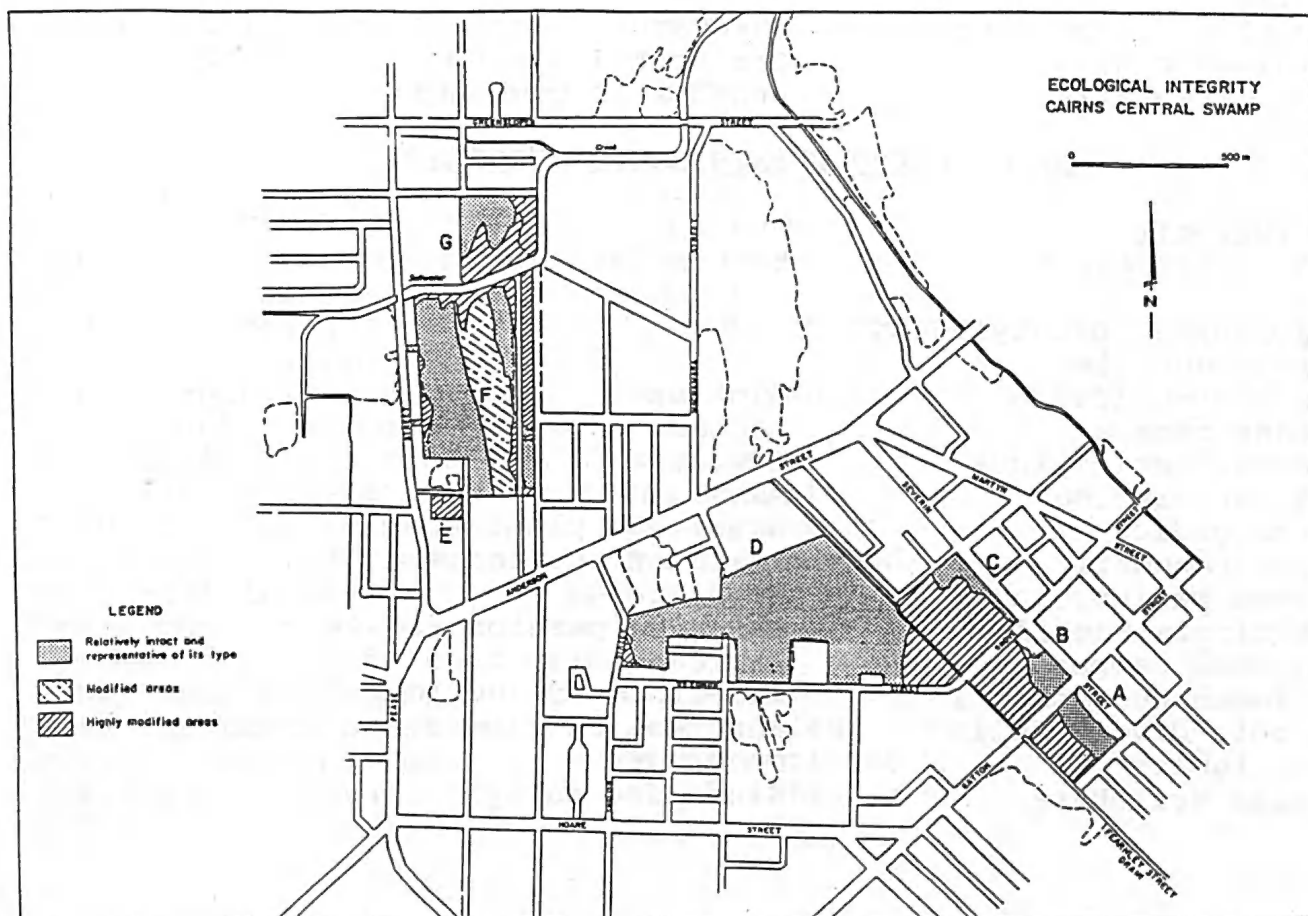
ANGIOSPERMS Dicotyledons

Ardisia humilis		C
Cassia obtusifolia	Sicklepod	C
Lantana camara	Lantana	U
Leucaena latisiliqua	Leucaena	C
Mangifera indica	Mango	C
Mimosa pudica	Sensitive plant	C
Mucuna bennetti	Flame of the forest	U
Murraya paniculata	Mock orange	U
Passiflora foetida	Stinking passion flower	U
Spathodea campanulata	African tulip tree	C
Thrysanthus stricta	Red flowered justicia	C
Tithonia diversifolia	Japanese sunflower	U
Urena lobata	Pink burr	U
Wedelia trilobata	Singapore daisy	C

MONOCOTYLEDONS

<i>Arecastrum romanzoffianum</i>	Queen Palm	U
<i>Asparagus asparagoides</i>	Asparagus fern	U
<i>Brachiaria mutica</i>	Parra grass	C
<i>Chloris inflata</i>	Purple top chloris	C
<i>Dieffenbachia leoniae</i> ?	Dumb cane	C
<i>Dracaena cannaefolia</i>		C
<i>Musa acuminata</i>	Banana	U
<i>Panicum maximum</i>	Guinea grass	C
<i>Philodendron lacerium</i>		C
<i>Ravenala madagascariensis</i>	Travellers palm	C
<i>Sansevieria trifasciata</i>	Mother-in law's tongue	U
<i>Syngonium Podophyllum</i>	Arrowhead plant	C
<i>Zebrina pedula</i>		C

The map below is an excerpt from 'Cairns Central Swamp Environmental Assessment and Development Control Plan (1991) Connell-Wagner', which denotes the various sections. A check list for sections C,D,E, & F will be published in future issues of this Journal. Again our thanks to Rob for all the effort he has put in to bring us this special report.



THE TOOTH-BILLED BOWERBIRD.

(Scenopoeetes dentirostris)

By: Clifford B. Frith
P.O. Box 581 MALANDA. Q. 4885

The Tooth-billed Bowerbird is an enigma: The cryptically-plumaged and elusive males suddenly appear in August, as if from thin air. They quickly clear and decorate a patch of upland rainforest floor, at which they sing loudly and continuously with a large repertoire of vocalizations that include copies of the calls of other bird species. These males disappear almost as suddenly, and apparently completely in February of the following year! The average person visiting the upland rainforests of the Wet Tropics during March to July, could easily be unaware of this bird species which is, however, there in abundance.

But why, you may well ask, do I use the apparently unfashionable name Tooth-billed Bowerbird (Scenopoeetes dentirostris) - Tooth-bill hereafter - when most contemporary bird books use Tooth-billed Catbird (Ailuroedus dentirostris)! The answer is that the former is undoubtedly correct and the latter is erroneous! There is absolutely no doubt that the Tooth-bill is a bowerbird but there has always been doubt as to it being a catbird.



Unlike males of other Australian rainforest-dwelling bowerbird species that attend a bower, the Tooth-bill is not a brightly coloured bird that differs much from the female of its kind. On the contrary the male Tooth-bill is identical to the female, being drably plumaged in browns with paler, off white underparts streaked brown. Tooth-bills live in upland rainforests of Qld's Wet Tropics between Mt. Elliott near Townsville in the south, to Mt. Amos near Cooktown in the north; between approx. 600 and 1400 metres above sea level.

The Tooth-bill was first described by Dr. E. Pierson

Ramsay from specimens 'shot near Cardwell', doubtless in the upland rainforests to the west, by an Inspector Johnstone in 1875. The scientific name then applied was Scenopaeus (sic) dentirostris. Since its first discovery this remarkable bowerbird remained almost completely unknown as a living bird until the mid 1980's.

Rumours have occasionally been aired in the literature concerning the possibility that males of the true catbirds in Australia, the Green and Spotted Catbirds (Ailuroedus crassirostris and Ailuroedus melanotis) might clear a forest-floor court and decorate it with leaves as does the Tooth-bill. Notwithstanding intensive field studies over several years of Green Catbirds by Dick Donaghey, Jim McEvoy, Gary Innis and Norbert Lenz, and of Spotted Catbirds by Francis Crome, Les Moore, Geoff Moore, my wife Dawn and myself, however, no such behaviour has ever been seen in the wild.

In 1973 Glen Storr, then taxonomist with the W.A. Museum, rejected Scenopoeetes as a genus exclusive to the Tooth-bill and grouped it with the catbirds in the genus Ailuroedus. Richard Schodde, taxonomist with the CSIRO in Canberra followed Storr and cited an undocumented observation of one or two Green Catbirds laying leaves on the ground as behavioural support for the combining of what he called the Tooth-billed Catbird with the true catbirds in the genus Ailuroedus. The observation Schodde alluded to, in fact, involved two birds held in captivity where, as Green Catbirds typically use large green leaves to line their nests, such activity may well have been the aberrant behaviour of a captive bird(s). Another such record of the Green Catbird aberrantly laying leaves on the ground in captivity exists; but as the aviary concerned also contained an adult male Regent Bowerbird, a bird known to typically lay leaves on the floor of a bower, this record is suspect.

The catbird bowerbirds of the genus Ailuroedus are, like most birds on earth, monogamous in their reproduction behaviour; which is to say that male and female form a pair-bond and defend a territory in which they nest and raise their offspring together. Early literature incorrectly implied or stated that the male Tooth-bill assists the female with nesting duties, and this was repeated as recently as 1984 by Norman Chaffer in his finely illustrated book on Australian bowerbirds. Tooth-bills are, however, like all other bowerbirds (unlike most birds) are polygynous; which is to say

that males are promiscuous and that females, once mated by the mate of their choice, nest build, incubate eggs and raise their young alone and unaided. It should also be noted that whilst catbirds are so named for their wailing calls, Tooth-bills make no such sound notwithstanding their enormous range of vocalizations!

Having been fortunate enough to carefully study numerous male Tooth-bills at their courts, and several females at their nests, Dawn and I became convinced that Tooth-bills are very different from catbirds in most aspects of their lives. We therefore specifically published some of our findings under the name Tooth-billed bowerbird Scenopoeetes dentirostris in order to express this view; contrary to general opinion at the time. We now find that several scientific papers published during 1992-93 (ref. further reading) concerned with the relationships of various bowerbirds as indicated by studies of genetic material, confirm our view. It is indeed to be 'Tooth-billed Bowerbird', Scenopoeetes being a valid genus unique to the Tooth-bill (a monotypic genus, having only one member species). Moreover, these genetic studies show the Tooth-bill to be more closely related to other bower-building bowerbirds than to catbirds.

Having hopefully laid the past nomenclatural confusion of the Tooth-bill to rest, I can now describe some aspects of the biology of this most fascinating bower-bird.

Males of all the non-monogamous or polygynous bowerbirds build a bower of sticks and/or grass stems and decorate them with various objects. Most readers will be familiar with at least a bower of one of the bowerbirds that occur in tropical Queensland; the Satin, Great, Spotted, Fawn-breasted and Golden Bowerbirds. The Tooth-bill is a remarkable exception, however, because it does not build or construct a bower, but merely clears an area of a few square metres up upland rainforest floor litter. It then brings large fresh leaves to lay, paler underside uppermost, upon this cleared 'court' as decorations.

'Court' is a better descriptive word for the display area of Tooth-bills than is 'stage', which has often been used, but is misleading as it implies a raised structure. 'Playground' is also often used to describe a bowerbird's bower or court, but this is totally inappropriate as there is nothing playful about what male bowerbirds do at the bower. Far from it!

In recent years a couple of good friends of mine have reported seeing a Tooth-bill court apparently decorated with objects in addition to green leaves; in one case some large seeds and in another some tree fruits. As I have never personally seen such a thing I would be delighted to hear of other observations, past or future, from any reader. Many people continue to mistakenly believe that the bowers or courts of bowerbirds have something to do with the nest or with nesting. They do not. These structures or courts are established, attended and maintained exclusively by males; and function exclusively as a focal point to which males attract as many females as they can for courting and mating.

Another remarkably erroneous aspect of the literature concerning male Tooth-bills concerns their vocalizations. Some of the earliest field observers were in no doubt that males advertise their courts with powerful and loud vocalizations that typically include mimicry of other bird calls. Several recent authors have, however, emphatically denied the ability of male Tooth-bills to mimic other bird calls. Let me assure the reader that, in advertising their court location, male Tooth-bills perform much avian mimicry as well as, if not better than, any other bowerbird. In fact their mimicry is often as well executed as is that of the famed male Superb Lyrebird.

In addition to watching numerous males incorporate calls of other bird species into their advertisement repertoire, apparently from memory, Dawn and I have witnessed innumerable examples of 'opportunistic' mimicry by them. Such instances are as amusing as they are instructive. An advertising male Tooth-bill, that has not used a Grey-headed Robin call for ages, may immediately incorporate a Grey-headed Robin call into its song the instant a robin becomes visible to it! Likewise, a male Tooth-bill may immediately incorporate the shrill flock contact note of King Parrots into its song as a calling flock of these noisy parrots streaks overhead; the Tooth-bill cocking its head to peer up through the forest canopy at the parrots before copying their sound.

Adult male Tooth-bills form aggregations of courts on discrete hill and ridge tops during August to February each year, and advertise their location with loud song. Each male spends an inordinate amount of each day close to his court in order to protect his collection of leaf decorations from rival males. Now and then he must, perforce, go off in search of forest fruits to eat. His absence is immediately made apparent to

his adjacent rival neighbours by his silence. This silence is the signal that rival males await before dashing in to a departed male's court to steal a leaf or two, without fear of retribution. By this means leaves are constantly moved from court to court by different males.

Experiments involving the marking of leaves on different courts, with court number and date written on them, quickly showed Dawn and I that some males steal far more leaves from a number of immediately adjacent rival males than they lose to neighbouring rivals. Such males appear to be more dominant at their court than are their rivals at theirs; and the more dominant males may well obtain more matings than do males with 'poorer' courts (with fewer leaves).

It is theorized that female Tooth-bills should visit several, perhaps many, courts and their attendant males during a courtship season before selecting a mate. As they meet their mate only for fertilization of their eggs they should choose with very great care. AS the male will contribute only his sperm to the considerable annual reproductive effort, the female should maximize the quality of the genes she passes to her offspring by the most careful assessment of the competing males.

In recent years several studies of other bowerbirds, notable the Satin and Spotted, have clearly shown that a few males, with better bowers (bower quality) and more decorations (the ability to collect and to defend more decorations), obtain most copulations in any one area in a season. Thus, there is clear evidence that females do in fact choose carefully, and that bowers or courts and their associated decorations do indeed appear to provide an indication of (or symbolize) relative male fitness.

Dawn and I have learnt much about what happens at the court of a male Tooth-bill once a prospective mate arrives in the immediate area. As soon as a male becomes aware of another Tooth-bill close to his court he drops, like a stone, onto the court edge to carefully and deliberately hide behind the base of a larger sapling tree trunk. He tentatively peers around the side of this 'display tree' in order to observe the movements of the visitor, and constantly moves in order to keep out of view. During this period of hiding the male continuously produces a 'whisper-song' of perfect mimicry of other bird calls strung together into an impressive repertoire. This very soft song of mimicry clearly attracts

the visitor, as it flutters or hops closer to the concealed male in an attempt, perhaps, to hear and see him better.

Once the concealed whisper-singing, male is satisfied that his visitor is indeed a female with 'serious intent' to be wooed he dramatically changes tactic! He hops out from behind his display tree into full view and proceeds to vigorously alternately hop and flutter across his entire court toward the female. His bill is widely opened and his throat feathers raised into a surprisingly conspicuous and contrastingly pale 'beard'. Fully opened wings are vigorously flapped through an expansive arc with each hop forward, interspersed by a crouch posture with wings held tightly against the body and the tail cocked upward and to one side. If the male's court and its decorations, his highly animated 'dance' with its vocal accompaniment, sufficiently impresses the female she may solicit him and be mated. Immediately after copulation the male may rush at and chase off the female; for he would not want her in the way should another female turn up!

Dawn and I have observed our study population of individually colour-banded (colour-coded plastic bands placed on the leg) male Tooth-bills at Paluma for many years. As a result we have been able to confirm that the male may return to the precise same tiny area of forest floor year after year for as long as fifteen years or more. Males within aggregations of courts may covet the (apparently perceived as superior) court location of a rival male, and will spend years trying to take it over. A bird that disappears from his long-used court is immediately replaced by a neighbouring adult male, or by a younger male that moves in and attempts to establish himself amongst his elders.

Studies Dawn and I have made of several nesting female Tooth-bills near Mt. Spec National Park, or Paluma near Townsville, have shown that they build a remarkably small and sparse nest. This is usually built in high dense suspended vine tangles. Here they raise their one or two offspring on a diet of tree and vine fruits and insects, particularly beetles, alone and in extreme secrecy. Few nests have been found. Only a very few nests have ever been observed to any extent at all, and none for any extended period of the nesting cycle.

People frequenting upland rainforests of the Queensland Wet Tropics year-round are as amazed by the conspicuousness and abundance of male Tooth-bills during the courtship period

(September to February) as they are by the apparently near-complete lack of the species during the winter months! In fact, the males and females, and their surviving young of the year, do appear to remain in the very same forests throughout the winter. They then become completely retiring and mute in habits and move about the canopy of the forest furtively feeding and in a way that makes their presence extremely difficult to detect.

What is truly remarkable about Tooth-bill winter feeding, and what in part enables the birds to be so inconspicuous, is the fact the Tooth-bills appear to become predominantly leaf-eating (folivorous) during winter. They then feed by tearing off pieces of fresh leaves and succulent growing tips of plants which they masticate thoroughly in the 'toothed' mandibles before swallowing what by then looks much like green tea leaves. Near-exclusive non-aquatic leaf-eating by any bird, let alone a relatively small perching bird (passerine) such as the Tooth-bill is extremely rare. Such a diet usually involves a radical modification of the digestive system, in order that the bird is able to extract adequate nutrition from such a diet. This remains, however, one of many aspects of the biology of this incredible bowerbird to be studied.

I should point out here that, contrary to popular myth perpetuated in much of the contemporary literature, the 'tooth-bill' of the Tooth-billed Bowerbird is not primarily, if at all, an adaptation permitting males to pluck leaves; for court decoration. It is in fact an adaptation to leaf-eating that equally applies, of course, to both sexes of the species. Some other bowerbird species, lacking a 'toothed' bill, have no difficulty in collecting large fresh leaves for their bower and/or nests. Indeed many smaller, finer billed birds other than bowerbirds remove fresh large leaves from plants without a 'toothed' bill adapted to do so. Other bowerbirds, such as the Satin, do eat some leaves in winter and have a bill 'tooth' very much smaller than that of the Tooth-bill, proportionate to the limited extent of leaf-eating in the diet

Perhaps when next you come across a Tooth-bill court in the magnificent (and now thankfully protected) upland rainforest of our Wet Tropics, you will pause and reflect upon how very intriguing a bird this is, but, whatever you do, please, do not refer to the unique Tooth-billed Bowerbird as a Catbird.

Our grateful thanks to W.T. Cooper for his kind permission to reproduce here his fine drawing of a Tooth-billed Bowerbird.

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UNUSUSAL SIGNALLING BY BARE-BACKED FRUIT BATS.

(Dobsinia moluccense)

By: Graham Harrington.

During September 1991 I spent a week camping in the riparian rainforest at the foot of the McIlwraith Ranges of Cape York. Immediately adjacent to the camp was a cauliferous fig with masses of dark red white flecked fruit which extended from 4m above the ground up into the canopy some 20m higher. Each fruit was about 4cm in diameter.

We identified Bare-backed fruit bats paying attention to these fruits but we were puzzled by their behaviour. Initially there appeared to be only a single animal. It hovered in front of the fruit making a lot of wing noise, even crashing its wings against leaves and twigs. However, instead of landing on the fruit, the bat suddenly flew away silently. After a short interval it would reappear and start nosily hovering again. We noted a regular 12 seconds of hovering then 5 seconds of silent circling. On other days there was quite a variation in this timing with hovering varying from 5-18 seconds with circling varying from 4-7 seconds. Longer intervals were presumed to mean the bat had left the immediate vicinity and such were commonly recorded. Occasionally the bat would actually settle on the fruit to feed prior to its starting the hover-circle routine again.

We came to the conclusion that the noisy hovering was some form of territorial announcement that other bats could hear and respond to. Perhaps an ambit claim on the fruit. However other bats did arrive and go through the same routine. On occasion these was interaction between bats with a lot of high pitched squeaks.

We discovered two other fruit trees receiving similar attention although they did not have any fruit on them. These were 25m and 60m from the 'campsite' fig.

The noisy flight associated with feeding is recorded by L.S. Hall in the 'Complete Book of Australian Mammals' but is has not previously been recorded that it does much noisy hovering that is not associated with feeding.

FLORAL RECOLLECTIONS OF A MOUNTAIN MAID.

By: Sybil J. Kimmins.

Fifty to sixty years ago the delightful little perennial (*Boea hygroskopica*) better known as Rock violet, was a common sighting on the Range-road section of the Gillies Highway. This plant bears a similarity to the African violet (*Saintpaulia*) though the velvety leaves are larger and the purple flowers are borne on longer, slender stems. A lover of moisture, it graced mossy rocks between pools and on the banks of tiny streams that trickled down the mountain side. I also saw it growing in clefts of rock cuttings through which the road passed. The longer 'wet' seasons of those days enabled it to survive the 'dry'.

When exploring a creek about 7km down from the previously known 'top gate', I chanced upon a clump of *Calanthe triplicata* orchids raising their queenly white heads from the leaf litter. This was my first sighting of them - a breath taking moment which is still with me today. The discovery of a huge spider with long, black, hairy legs discouraged me, at the time, from further exploration of the area.

Down the extremely rocky Huntsbrook Creek the Tree spider orchid (*Dendrobium tetragonum*) grew. Its blotchy purple/yellow flowers have a delicate perfume and the slender square-sided pseudobulbs are unusual. I remember finding a clump of Rock orchids (*Dendrobium speciosum*) in full flower. They were attached to a rock displaying 33 heads of bloom. Truly a magnificent sight. A somewhat similar smaller plant, the Oak orchid (*Dendrobium ruppianum*) grew on casuarinas. The Pencil orchid (*Dendrobium teretifolium*) shed its sweet perfume throughout spring from trees in semi-open forest. Other *Dendrobiums* which I vaguely remember seeing on the mountain side were *monophyllum*, *linguiforme* or *cucumerinum* and maybe *discolor*. It was a long time ago!

A quaint epiphyte, the Banana orchid (*Pholidota pallida*) was occasionally seen in the gullies. Its common name derives from its smooth green pseudobulb. Each tiny flower on long thin stalks are surrounded by a papery bract. I remember seeing an exceptional specimen of Buttercup orchid (*Cymbidium madidum*) growing in a rotting stump near our house. Its pendulous racemes carried lots of sweetly scented yellow/green flowers.

Once when a cousin visited, we walked up past Heale's Lookout

to the edge of the rainforest and were delighted to find pink Ground orchids (*Caladenia carnea*). I only saw them on this occasion as normally, walking alone, I wouldn't venture far.

The prettiest flowers that grew on grassy ridges were undoubtedly the Fringe lillies (*Thysanotus tuberosus*). Fragile *Hybanthus* also grew among the grass. On lower slopes the brilliant red hibiscus (*Abelmoschus moschatus*) and also the Arrowroot plant (*Tacca leontopodioides*) could be seen if you were lucky enough to be there at the right time.

The Roseleaf raspberry (*Rubus rosifolius*) which bears white flowers, grew by the roadside. I recall my mother's solitary effort of jam making from its insipid fruit. The broad-leaved pink flowering (*Rubus mollocanus*) also grew on the roadside but its fruit was less prolific.

The flowering Eucalyptus were then, as now, hosts for the feeding flocks of rainbow lorikeets (*Trichoglossus haematodus*).

For my interest and knowledge of local orchids gained as a girl while living beside the Gillies Highway, I am indebted to my dear friend Amy Le Bas, who at that time, lived in Cairns. She has long since left to tend her 'Garden in the Sky'.

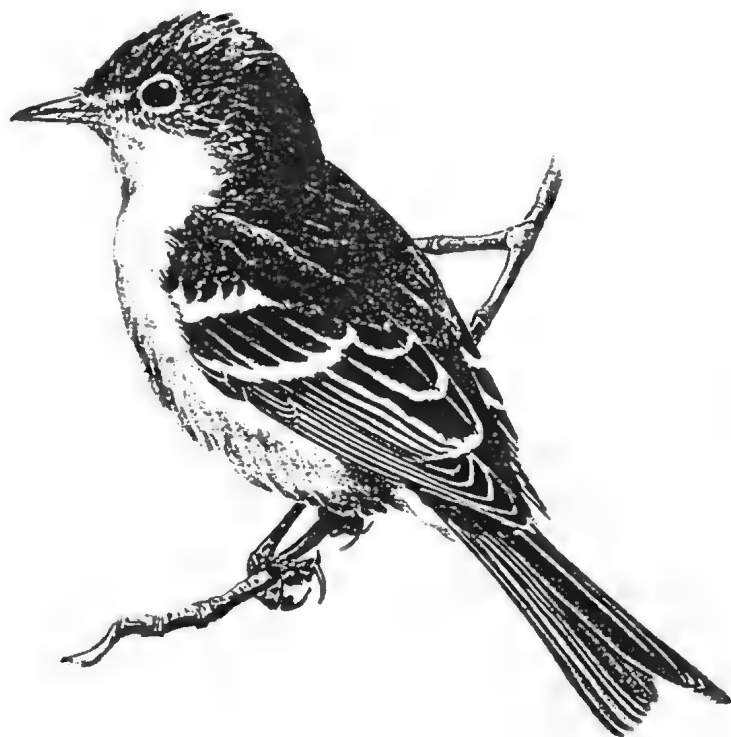
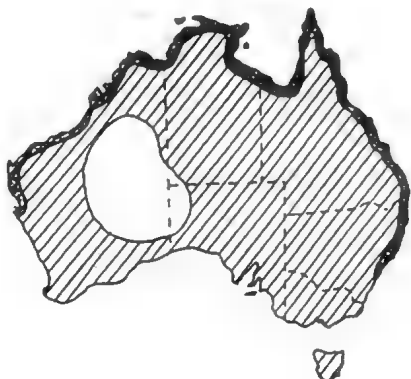
SOME INTERESTING ACTIVITIES coming up are:

- April 9th - 12th (Easter Weekend) a choice of two camp-outs. Kingfisher Park, Julatten or the Council Van-Park Georgetown. (Mainly for birdos). This combines the Sunday field trip.
- April 13th Meeting - 8pm Education Centre, Greenslopes Street. Guest Speaker is Jim Waite.
- May 1st - 3rd (Labour Day Weekend). Camp at Kauri Creek, Lake Tinaroo.
- May 9th Sunday field trip to Oak Forest, Kuranda.
- May 11th Meeting - 8pm Education Centre, Greenslopes Street. Guest Speaker is Andrew Grahame who shall be speaking on Lamington National Park.
- June 6th Sunday field trip is to Goldsborough State Forest.
- June 8th Meeting at the Education Centre 8pm. Guest speaker (to be advised).
- June 12th - 14th (Queens Birthday Weekend). Camp-out at the Malanda Caravan Park.
- July 23rd - 25th (Show Holiday) camp-out at Cowley Beach south of Innsifail.

LITTLE FLYCATCHER.
(Empidonax Smallii - LBB)

This small bird is another in the genus Empidonax and is particularly difficult to identify, since it has no field marks. The best approach is to look at the wings, tail and feet. However, other parts of the bird may also be looked at, if you like. It is so similar to other bird species in this genera that even individual birds have difficulty with identification. This drastically reduces mating opportunities and apparently accounts for its small population. A further complicating factor is that both males and females are unsure of their own sex, thus compounding problems. The call of this species is do-ray-me-fa-so-la-ti-do both in ascending and decending intonations, although it is known to mimic other flycatchers. **OBSERVATION HINT:** Most often seen when birding alone.

LITTLE FLY



CATCHER



19.

BACK TO AFRICA

A TWO YEAR ADVENTURE THROUGHOUT AFRICA IN THE NINETIES

BY: P. Deem.

Africa: It is a continent of contrasts. The romantic images of vast plains dotted with elephants, giraffes and cheetas, somehow don't sit well with the distressing news reports of war and famine-stricken nations like Somalia. This is how John and Inge found this vast country during the two years venturing through. They went for the wildlife, and for two years it was a very wild life.

Cairns Naturalist John Bell together with his travelling companion Inge Brandt of Maryborough are slowly re-adjusting to the normal Australian quiet pace after a drama-charged two years touring through Africa.

Their meandering course in a battered old 4WD took them through a continent wracked by famine, poverty, civil wars, government corruption, environmental degradation and the upheaval caused by the westernisation of a tribal people whose lifestyle and culture are a stark contrast to the ways of the west.

They went for the wild life and got far more than they bargained for!

For Inge, it was a first, the vast continent was totally new to her, full of adventure, unpredictability and learning. For John, it was a trip back in time - he had lived in southern Africa in the 1970's and was keen to see what had changed.

They arrived in Africa on January 7th, 1991, and within a couple of weeks their plans were thrown into disarray. January 16th, 1991, not only rates a mention in John's diary as time spent in Marrakesh - it is a red letter day in world history books - the start of the Gulf War.

The trail-blazing pair had intended to go across the top of the continent, but with war of international proportions erupting across the Red Sea, there was no way they were going to risk touring through the Arabic countries. Instead, they went down through the Sahara and across western Africa, with its extremes of wealth and poverty, of helpful villagers and thieving, violent gangs, and scenes of incredible beauty and barren desolation. They could be stopped up to 20 times a day and asked to hand over passports, driver's licences and other

papers. To get these documents back, the checkpoint guards invariably demanded money (which John and Inge refused to give) - bribes being an integral part of life in westernised Africa where the poor seem to get poorer and the rich keep adding millions to their Swiss Bank accounts.

The story was much the same right throughout Africa - the check points, the threat of being attacked or robbed, the high prices asked for even the most basic services, the aftermath or rumblings of civil war. John and Inge were always on alert; when their guard slipped, so did some of their belongings.

In stark contrast though was the wildlife - the very reason for their adventure. Throughout their journey they saw close to 1000 bird species and 135 mammals - about one tenth of the mammals found on the continent. Much of the bird-watching was done in the 80 National parks or Nature Reserves they visited, sometimes for a day, other times for several.

Highlights were the mountain gorillas of eastern Zaire, the flamboyant lemurs on Madagascar, the incredible variety of wildlife in Kenya and southern Africa, being adopted by a chimpanzee, and taking in the sights like Lake Malawi, the Victoria Falls, the rugged Namib desert and Lake Kivu.

Sometimes the wildlife turned wild - being charged by a hippopotamus and by elephants was not pleasant; being accosted by baboons was at the same time both funny and scary.

Despite the amazing beauty and variety of the unique animals and birds, John could not help but feel a certain sadness and disappointment - the sadness of knowing the black rino would be extinct within a few decades. With the line of poaching spreading John feels it's quite possible for him to outlive the rino himself. Without the commitment of the local governments to save wildlife there is little that can be done. No amount of aid money can help. John has noticed a big difference in the numbers of many species since he last lived in Africa. So too the size of the Nature Reserves was dwindling, habitats were being destroyed. Rainforests? What rainforests?

Africa is not a travel destination for the faint-hearted, should you wish to do it like Inge and John. Negotiating with the rougher locals was a major headache - thieves succeeded seven times taking John's prized binoculars and camera, probably selling them for as little as a case of beer.

Worse was to come in eastern Zaire where John had a brick thrown in his face, resulting in six stitches and three broken teeth. He went toothless for months because dental help in Africa is not easy to come by.

Despite political unrest however, the threat from thieves and their having to pass through several 'hot spots' neither Inge nor John actually felt threatened. Ninety per cent of the African were friendly towards them and welcomed them into their communities where Inge's nursing experience was put to good use. They delighted in seeing some tribes continuing to live just as their ancestors had - the Ovahimbas of Namibia, the pygmies of central Africa and the Samburus of northern Kenya.

Under their own steam Inge and John were able to take their time through some countries and scurry through those where unrest was likely. The roads varied from the worst in the world to the best. On one stretch of road in Mali which took a week to traverse not even a donkey-cart was to be seen. At times it was frightening to think that if they broke down there was absolutely nothing they could possibly do. The main highway through Zaire proved nothing more than a quagmire (even that's an understatement). In parts the 4WD wallowed in muddy trenches deeper than the car itself, the sides of the hole the only thing holding the vehicle up as it slugged through on 45 degree angles. Creek crossings had to be made from logs, and locals were called on to help pull them out from the bogs. (This was not even the wet season). Other roads, including eight lane highways in the Capital Cities were the smoothest in the world.

Towards the end of the trip and with the vehicle virtually being held together with rope they had logged 77,000 kilometres, 30 countries and more than 11,000 litres of diesel which ranged in price from 5 cents to \$1.05 cents per litre. The tally of tyres worn out was 17, the number of punctures nudged 40, with the list of replacement parts being endless.

After such an amazing adventure, settling back into life and work in Cairns, for John - won't be easy. Inge yearns to explore other parts of the world - Africa just whet the appetite. For a brief moment though - it's good to be away from the wild life.

'The Chronicle'
March 6th 1993.

RUFIOUS OWL PREDATION ON A HERBERT RIVER RINGTAIL POSSUM

By: John Winter
P.O. Box 151, Ravenshoe. Qld. 4872.

Owls are very well known predators of ringtail possums (Fleay 1968, Seebeck 1976, Shodde and Mason, 1980), but it is rare to witness the moment of kill. On the evening of 4th April, 1988 Servaas van der Horst, an overseas visitor, and I saw such an event on the Tully Falls Road, where the rainforest canopy is continuous over the road.

At 8.45pm we were observing a Rufous Owl (Ninox rufa) under white light from a spotlight as it perched about 20m up on a tree to one side of the road. As Servaas was checking the identity of the owl in the bird book, I continued to watch. It took off flying across the road to snatch a pale coloured juvenile Herbert River Ringtail Possum (Pseudocheirus herbertensis) from an almost horizontal branch.

I first became aware of the possum when suddenly there was a flurry of movement and two pairs of shining eyes began gyrating wildly as the owl, with its prey firmly held in its talons, continued in flight beyond to another branch. The owl was weighed down with its burden and crashed clumsily through the canopy foliage of a small tree to land about 20m beyond the point of impact with the possum.

The owl perched awkwardly with its near wing held high, apparently caught on a small branch, grasping the possum in the abdominal region with its right talon. The possum was on its back which was stretched out horizontally, looking up at the owl, forelegs stretched as though ready to strike the owl.

However, the possum remained frozen, though obviously alive, but at no stage did it make any sound. The owl then changed its grip so that it had hold of the possum from behind with its talons grasping the possum round the chest just behind the front legs. This appeared to be the lethal grip. The owl presumably sunk its talons into the chest cavity, as within a minute or two the possum went limp, apparently dead.

About half an hour after having first seen the owl, we left it perched facing us with the possum gripped from behind by the upper thorax so it also faced us, body and head hanging loosely, and although apparently dead, the eyes of the possum still brightly reflected the light from our spotlights.

Two features of the event are noteworthy. Firstly, was the way the owl crashed clumsily through the foliage of the nearby tree, to land with its wing held back by a twig. An inelegant capture which would seem to make the owl prone to injury. However, this apparently clumsy behaviour may not be unusual as Hollands (1991) describes a female Rufous Owl as flying 'straight at the Jungle Fowl, there was a crash, a long shriek, then more crashes, going down towards the ground. Then silence'. Secondly, was the complete lack of vocalization or retaliation by the possum, eventhough when first caught it was in a position to be able to strike the owl.

Because events such as the one described are infrequently seen, I am interested to hear from anyone who has observations of predators - owls, quolls or pythons - capturing possums or other arboreal mammals.

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 Our thanks to Judy Stephens of Ravenshoe for artwork depicting the Cassowary for the 60th Anniversary Edition 194 (Sept-Oct '92). Artwork for this current Edition 195 (Apr-May '93) has been submitted by Brenda Moller of El Arish. Should you wish or know of someone who would like to submit original artwork for forthcoming Editions please contact either Dawn Magarry or myself or write C/- the address as shown on the front cover.

 SPECIAL thanks to my nephew David Duignan for once again going out of his way to print these magnificent covers. David works for Eagle Print in Brisbane as their Graphic Artist.

CRITTERS, CARS, CARNAGE, CONNECTIVITY AND CULVERTS.
REPERCUSSIONS OF RAINFOREST ROADS.

BY: Miriam Goosem

When a road traverses rainforest a number of repercussions are likely, often unforeseen by road planners. The destruction of habitat caused by road construction should be considered - for example the United States Council on Environmental Quality estimated that each mile of interstate highway can require the alienation of up to 48 acres of wildlife habitat. Highway construction can also have major hydrological impacts including erosion during construction, effects on stream habitats both upstream and downstream and changes to groundwater distribution. One of the most obvious effects is the death of animals which attempt to cross. Often however, it is only the remains of the larger species which are noticeable. This may be only the tip of the iceberg as can be seen from the numbers of animals listed in the accompanying table.

Over more than three years a survey of wildlife mortality was undertaken on the Kennedy Highway between Smithfield and Kuranda as part of work leading to a PhD in Environmental Studies at James Cook University. On four short (0.5km) sections of the highway where it passes through rainforest all roadkills were collected once each week and identified in the laboratory. Some people using the highway early on Sunday morning may have wondered why someone was wandering along the side of the road. Collecting seed, perhaps? Well, I'm afraid it was nothing quite as pleasant. It is necessary to walk rather than drive when searching for roadkills as most of the smaller animals simply cannot be seen from a car, even when driving very slowly. Numbers in the table are a very conservative estimate of actual road wildlife mortality for a number of reasons including:

- a) small species are recognisable for only a short time before they disappear from the road;
- b) animals which manage to leave the road surface return to the forest to die, or decompose very quickly on the road verge;
- c) some roadkills are removed by scavengers (although this did not appear to be a large problem in the area surveyed).

Considering that only a small proportion of the total length of the highway which passes through rainforest has been sampled in this survey, it is obvious that the numbers of vertebrate animals killed on the highway each year must number in the tens of thousands. Added to this is the fact that many of the species only remain recognisable on the road for one or two days after death (particularly the hylid amphibians which make up a large portion of the numbers). Thus this estimate is at best a very conservative one. It is hoped that this extrapolation can be quantified with longevity data already collected but not yet analysed.

A glance at the table demonstrates another potentially detrimental effect of roads which pass through rainforest. Many of the species collected are not normally inhabitants of the rainforest. Many open forest species, such as the Brown Bandicoot and a number of frog species have been collected. The road acts as a conduit for these species and allows them to penetrate into rainforest areas which are not their preferred habitat. Some of the normal rainforest inhabitants may be displaced by such behaviour. The problem may be exacerbated by the intrusion along roads of feral species such as the Cane Toad.

One of the aims of the survey was to discover whether the presence of a road caused an inhibitory effect in some vertebrate species. This 'linear barrier' effect has been observed for certain forest species elsewhere in Australia and the world and is the result of a number of synergistic effects including:

- a) the marked contrast in microclimate between forest and road edge causing a species adapted to the forest understory to avoid the high light intensity, large temperature and humidity fluctuations and lack of protective canopy cover of the road and verge;
- b) Emissions and disturbance from motor vehicles such as noise, headlight illumination at night, dust, exhaust fumes;
- c) Environmental instability on road verges due to mowing, grading or weed spraying and consequent vegetation changes.

Such inhibitory effects depend, to a large extent, on an individual species size, mobility, behavioural characteristics

and extent of dependence on closed forest ecosystem. In some cases it may be so great as to divide populations on either side of the linear barrier and thus reduce population size and genetic viability in both short and long term.

In this survey where the distance between rainforest margins was wider, less animals of most species would attempt to cross, (as evidenced by the number of roadkills), thus suggesting that there is an inhibitory effect of the clearing. Herein lies a conundrum. It is preferable to allow the greater number of animals to become mortality statistics in order to maintain a larger population size and genetic viability of a species. I would suggest that this would be true in most cases. The roadkill evidence may be showing that populations are not being totally fragmented by the presence of the road. The exception to this would occur in species and populations where numbers are already so small that the mortality statistics constitute a large proportion of the total population number. In such cases conservation of all individuals must be utmost priority.

Naturally it would be preferable if the road carnage would be reduced while still maintaining population size. The aim can be achieved by the provision of alternative crossing routes. For arboreal species such as possums, these may be provided by maintaining canopy closure above the road, allowing an aerial advantage. However, birds and bats of the rainforest understory often are still unlikely to cross a road unless protective canopy closure is provided. In this contest it is interesting that comparatively few birds were found as roadkills in this survey.

Many species have been observed to use road underpasses such as culverts. Another aim of this research, at present being supported by the Wet Tropics Management Agency, is to discover which designs of culverts and tunnels are suitable for which species. A small species is unlikely to make use of a very large tunnel, due to the presence of large areas of open space and most animals will avoid underpasses which do not have adequate protective cover at the entrances. Specific designs have been tested for a number of species in other parts of Australia and other areas of the world with many being successful. It is important to note that care must be taken not to provide a happy hunting ground at tunnel exits for predators i.e. feral cats, a result observed in a number of purpose built tunnels which did not provide adequate cover. One interesting result of the road mortality survey was that

one species which are known to occur within the rainforest of the Kuranda Range area were not found. These species either are not crossing the road at all, are extremely clever at avoidance of speeding vehicles, or use a different crossing route. Some species of interest not found or which occurred in unexpectedly low numbers include the Musky Rat-Kangaroo, the Striped Possum, the Prehensile-tailed Rat, a number of rainforest bird and skink species, and the microhylid frogs. It remains to be discovered whether these species are suffering severe population fragmentation effects or whether they are using alternative crossing methods.

**WILDLIFE MORTALITY STATISTICS FOR VERTEBRATES ON
THE KENNEDY HIGHWAY.**

ALL VERTEBRATES		4078
Total Mammals		489
Total Birds		81
Total Reptiles		450
Total Amphibians		3058
Mammals:		
Rodents	(mainly Fawn-footed Melomys, White-tailed and <u>Rattus</u> spp.)	315
Bats	(mainly insectivores)	26
Monotremes	(Echidna)	1
Marsupials	(mainly Northern Brown Bandicoots, Long-nosed Bandicoots, Yellow-footed Antechinus and Pademelons)	125
Unidentified mammals		23
Amphibians:		
Cane Toad		1062
Frogs	- Hylidae (rainforest)	964
	- Hylidae (open forest)	800
	- Hylidae (unidentified)	115
	- Myobatrachidae (rainforest)	106
	- Myobatrachidae (open forest)	1
	- Microhylidae (rainforest)	10
Reptiles:		
Snakes	- Pythons (Amethystine, Children's, Carpet)	23
	- Colubridae (mainly Northern Tree Snake, Common Tree Snake, Night Tiger & Slatey Grey)	117
	- Elapidae (mainly Eastern Small-eyed Snake)	45
	- Typhlopidae (Blind Snakes)	14

	- Unidentified	20
Turtles	- Saw-Shelled	2
Lizards	- Scincidae (mainly <u>Carlia</u> , <u>Sphenomorphus</u> spp.)	166
	- Gekkonidae (mainly Northern Leaf-tailed Gekko)	40
	- Agamidae (mainly Boyd's Forest Dragon)	14
	- Varanidae (mainly Spotted Tree Monitor)	6
	- Undidentified	3
Birds:		
Various,	no dominant species (mainly rainforest species)	81



OUR COVER

COOKTOWN ORCHID (*Dendrobium bigibbum*)

Australia's best known and possibly showiest orchid. Colour is a rose-purple to deep magenta-purple and is found in Queensland from the Daintree area to the tip of Cape York Peninsula on trees and rocks. It flowers continuously from January to November.

BULBOPHYLLUM BAILEYII

BY: S.J. Kimmins

Little spotted orchid bloom
You thrive in the tropical summer heat
That wilts this English Bluebell.

On the hottest of February days I search for you,
Hidden deep in a shrub
Your perfume betrays your presence.

Proudly, with royal colour splashed,
Each head stands out from the pseudobulb
On its elegant leg, alone.

Proud yet shy, for the only ones
To see your rare beauty are those who search.
I sought, I found, I am thankful.



P 570.5
N 864